



Policy & Procedure (P&P)

Policy Title :

The phenotyping test

Department	Index No.	Scope
Laboratory & Blood Bank	LAB-125	All Blood Bank Staff
Issue Date	Revision NO	Effective Date
01/06/1433	3	24/08/1440
Review Due Date	Related Standard NO.	Page Number#
24/08/1442	CBAHI (LB.63)	5

01. Policy:

The phenotyping test in the system RH-Kell is performed for:

01.1. All units of PRBCs.

01.2. All patients with hereditary hematology diseases (SCA, Thalassemia, G6PD deficiency....) or HDU patients or onco-hematology patients or female patients of childbearing age or pediatric patients.

02. Definition :

02.1. N/A

03. Purpose :

- 03.1. To prevent allow-immunization events in patients that are multi-transfused or for women in childbearing age.
- 03.2. The purpose is not to transfuse a patient and introduce a different antigen in the system RH-Kell that are the most immunogenic antigens.
- 03.3. We should perform the phenotype for the patient then choose the suitable unit of PRBCs already phenotype.

04. Procedure :

04.1. Units of PRBCs

All units of PRBCs are phenotype by automated analyzers:

04.2. TANGO optima:

- 04.2.1. The TANGO-optima analyzer works on microplates.
- 04.2.2. The blood bank technician loads the samples manually in the analyzer.
- 04.2.3. The blood bank technician selects DONOR PROFILE: including ABO-D grouping, RH-Kell phenotyping and antibody screening.
- 04.2.4. The analyzer will proceed the tests then will show the results in the screen.
- 04.2.5. The blood bank technician validates then prints the results.
- 04.2.6. After the serology results are received and the malaria tests are performed, the blood bank doctor or the supervisor and the blood bank technician verify together all the TTD results and the blood groups of the units then the blood bank doctor or the supervisor or the blood bank technician prints the PRBCs units label stickers then shifts the PRBCs units from the unscreened area and unscreened fridge to the screened area and screened fridge.

04.3. ORTHO-VISION:

- 04.3.1. The ORTHO-VISION analyzer works on gel cards.
- 04.3.2. The blood bank technician loads the samples manually in the analyzer.
- 04.3.3. The blood bank technician selects DONOR PROFILE: including ABO-D grouping, RH-Kell phenotyping and antibody screening.
- 04.3.4. The analyzer will proceed the tests then will show the results in the screen.
- 04.3.5. The blood bank technician validates then prints the results.
- 04.3.6. After the serology results are received and the malaria tests are performed, the blood bank doctor or the supervisor and the blood bank technician verify together all the TTD results and the blood groups of the units then the blood bank doctor or the supervisor or the blood bank technician prints the PRBCs units label stickers then shifts the PRBCs units from the unscreened area and unscreened fridge to the screened area and screened fridge.

04.4. PATIENTS

- 04.4.1. Applicable for:
- 04.4.2. All patients with hereditary hematology diseases (SCA, Thalassemia, G6PD deficiency....)
- 04.4.3. HDU patients
- 04.4.4. Onco-hematology patients
- 04.4.5. Female patients of childbearing age
- 04.4.6. Pediatric patients and newborn.

There are 2 main methods to perform the phenotype:

- **Automated method** using either TANGO optima or ORTHO-VISION analyzers.
- **Manual methods:**

A. Slide method:

- 1- The blood bank technician puts 5 drops of PRBCs on a slide separately
- 2- The blood bank technician puts on each drop one drop of Anti C, anti c, antiE, anti e anti k
- 3- Mix by using a stick
- 4- Rotates the slide gently then reads the result.
- 5- If the antigen is present, it shows agglutination, if not there will be a smooth reaction.

B. Tube method:

1. The blood bank technician prepares 5 tubes labeled anti C, anti c, antiE, anti e and anti K.
2. The blood bank technician prepares a 3% suspension of PRBCs by filling the tube to the half with normal saline and by adding 3 drops of PRBCs (EDTA sample centrifuged).
3. The blood bank technician distributes the anti C, anti c, anti E, anti e and anti K in each tube.
4. Mix and centrifuges then reads the result.
5. If the antigen is present, it shows agglutination, if not there will be a smooth reaction.
6. If the antigen is present,

C. ID-Gel method:

1. Label one Phenotyping Gel card.
2. Prepare a 3% suspension: add 25yl of PRBCs of the EDTA patient centrifuged sample to 500 yl of Diluent 1
3. then mix very well
4. Distribute 12.5 yl of the prepared suspension to the wells CcEeK Ctl in the Gel card.
5. Incubate at room temperature for 10 min.
6. Centrifuge
7. Read the results
8. If the antigen is present, it shows agglutination (4+) if not there will be no reaction and all RBCs fall down.

D. Microplate method

1. Label one Phenotype microplate for Tango machine
2. Prepare a 3% suspension: add 25yl of PRBCs of the EDTA patient centrifuged sample to 500 yl of Bromeline (Tango).
3. then mix very well
4. Distribute one drop of the prepared suspension to the wellsD C c E e Cw K Ctl in the Microplate.
5. Incubate at room temperature for 20-30 min.
6. Read the results by rotating the microplate slowly.
7. If the antigen is present, it shows agglutination, if not there will be a smooth reaction.

04.5. How to choose the suitable unit of PRBCs:

- 04.5.1. When the blood bank technician receives a crossmatching request for any patient he checks if the patient is:
 - 04.5.1.1. with hereditary hematology diseases (SCA, Thalassemia, G6PD deficiency....)
 - 04.5.1.2. HDU patients
 - 04.5.1.3. Onco-hematology patients
 - 04.5.1.4. Female patients of childbearing age
 - 04.5.1.5. Pediatric patients and newborn.
- 04.6. The blood bank technician checks the File labeled PHENOTYPE which includes all the patients already phenotype classified by alphabetic order, then checks if the patient name and the file number are already registered. The bank technician repeats the Blood grouping only and writes the same phenotype.
- 04.7. The blood bank technician uses the table attached labeled ``How to choose the suitable unit of PRBCs`` as reference to decide which unit he will choose.
- 04.8. If the same phenotype is not available, the blood bank technician checks the reserved units and discusses the alternative blood groups with the doctor if applicable, or if it is not possible the blood bank technician follows the immunogenic degrees of each antigen: D> K > E > c > C > e

05. Responsibilities :

- 05.1. All laboratory staff of Alqunfudah General Hospital.

06. Equipment & Forms

- 06.1. TANGO optima
- 06.2. ORTHO-VISION
- 06.3. ID-Gel cards and ID-semi automated machine
- 06.4. Phenotype file
- 06.5. Table: "How to choose the suitable unit of PRBCs"

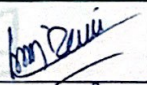
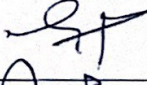
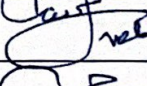
07. Attachment :

N/A

08. Reference

- 08.1. AABB technical manual 18th edition, 2014.

Preparation, Reviewing & Approval Box

	NAME	POSITION	SIGN & STAMP	DATE
Reviewed By	Dr RAJA NACER SASSI	Head of Blood Bank		16/8/1440
Reviewed By	Dr. IBRAHIM AWADH	Lab & B.Bank HOD		16/8/1440
Document Reviewed By	Ms. SADIAH ALMAHMOUDI	TQM Director		18/8/1440
Reviewed By	Dr. AGEEL ALGANIMI	Medical Director		18/8/1440
Approved By	Dr. ABDULLAH ALJABRI	Hospital Director		18/8/1440

